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ABSTRACT

In preparation for the 1979 World Administrative Radio Conference (WARC), this paper lists some of the issues on which WARC participants will focus. These issues include the expansion of the shortwave spectrum and the formulation of more equitable, more efficient procedures by which broadcasters are awarded high-frequency shortwave bands; ways to regulate low-frequency transmissions in areas where they were previously banned; the activities and internal regulations of the International Frequency Registration Board (IFRB); the effects of international law on an international organization, such as the IFRB; the need to simplify and clarify radio regulations; and the possible reorganization of world broadcasting to eliminate its present geographical divisions. Diagrams illustrate the percentage of international frequency allocations, the number of transmitters (worldwide), and the number of broadcast receivers (worldwide). (RL)

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ISSUES OF THE WORLD ADMINISTRATIVE RADIO CONFERENCE 1979:

BACKGROUND OF WARC 1979:

The Administrative Council of the International Telecommunication Union (ITU) has resolved that the World Administrative Radio Conference (WARC) 1979 shall be convened at Geneva on 24th September, 1979 for a duration of 10 weeks.

2. The agenda of the WARC 1979 includes, among other things: to review and, where necessary, revise the provisions of the Radio Regulations relating to terminology, the allocation of frequency bands, associated regulations and related appendices etc. The present Radio Regulations went through a similar extensive review almost 20 years ago in 1959. The general shape of Radio Regulations has more or less remained the same since 1959.

3. The entire picture of the telecommunication scene has been drastically transformed from that in 1959. At that time most of the countries of the World did not have television services. The use of Microwave Frequencies was rare. Satellite Communication was only a scientific excitement. Cable technology had only started to mature. The power of broadcast transmitters was limited to a maximum of 200 kilowatts.

4. In the past 20 years, this picture has changed almost beyond recognition. Television, including Colour Television has expanded rapidly throughout the World. Microwave Communication has become the back-bone of heavy traffic circuits. Satellite Communication has matured. Cable technology has advanced into the technique of fibre optics with practically un-limited channel capacity. Multi Mega Watt Broadcast Transmitters with highly directional antennas have become a matter of standard technique.

5. This Conference is also very important because it will not only take care of the changes during the last 20 years: but it will also have to anticipate the developments in the field of telecommunications till the close of the present century. It is very important that all participants are very clear about their own objectives at the WARC, 1979 and keep in view the entire period of 40 years so as to avoid supporting positions, un-intentionally, which may exclude desirable national objective before the entire range of the possibilities is fully visible.

AN IMPORTANT CASE:
Implications for broadcasting:

6. This Conference is considered to be very important by broadcasters. In the past, the spectrum of frequencies, particularly the High Frequency Bands have been apportioned to the various users on a "first come, first served" basis. This historically conditioned allocation

has resulted into an inequitable distribution. The present allocation of the High Frequency Bands amongst the various services which has hardly changed since the Atlantic City Conference in 1947 is shown in figure-1. This illustrates clearly the point in question.

7. The theoretical capacity of the Shortwave Broadcast Bands for 24 hours' usage of the available 462 channels is approximately (24 hours x 462) = 11088 channel hours. This theoretical capacity cannot be fully utilised, as the listening hours are not spread equally over the 24 hours' period and the various propagational conditions make it impossible to use all the 462 channels for the entire duration of 24 hours. These factors limit the channel hours capacity between 6000 to 9000 channel hours.

8. An attempt to introduce a coordinated plan of fixed allocation of frequencies proved unsuccessful during the World Administrative Radio Conference of 1959, for the simple reason that the total requirements even at that time were double the available channel hours.

9. Most countries broadcast on shortwaves to communicate their cultural and political ideals to the rest of the world. This has resulted in an un-precedented growth of World wide transmitters shown in fig. 2.

10. In view of the tremendous expansion that has taken place at the transmitting end of High Frequency Broadcasting, within the very limited confines of the spectrum allocated for this purpose: only about 25% of the signals actually transmitted in the spectrum can be received with good reception quality. This most un-happy situation has naturally resulted in a mad race of power and use of more and more alternate channels for high frequency broadcasting. This has resulted in further confounding the confusion. The requirement of spectrum for broadcasting has steadily increased to 26000 channel hours during 1976. This includes 2300 channel hours which were not registered with the International Frequency Registration Board of the ITU: as well as 3600 channel hours, which spilled out-side the confines of the Broadcast Bands. Studies conducted by various organisations indicate that the Shortwave Broadcast Bands are at present over-loaded by a factor of 3 to 4.

11. Shortwave broadcasting is the only medium to reach the audience directly at any time throughout the World. It is a very economical means to provide Radio programmes for a large area. Alternative means are not apparent. For years to come, the shortwave broadcasting will be the only means for World-wide transmission and reception in large areas.

12. The growth of the listening end of broadcasting over the course of years, is indicated in figure-3. Out of the total number of approximately one billion Radio receivers in the World today, the shortwave receivers are estimated to be approximately 200 million. This growth is not compatible with efficient spectrum utilisation. Interference-free reception has to be ensured to provide a satisfactory service to the listeners with inexpensive portable receivers.

13. Another important factor in the above consideration is, that services, which have the lion's - share of the spectrum have increasingly

turned to using other more sophisticated means: such as submarine cables, microwave circuits and satellite communications. The expansion of the shortwave Broadcast Bands at the expense of the Fixed Services is not only necessary, but also, in fact, will hardly affect these services. The evidence of this lies in the fact that the usage of frequencies outside the allocated bands by Shortwave broadcasting stations has been accepted without complaint by most of the administrations. This spontaneous bursting of the shortwave Bands at the seams is a reality.

14. In 1975, the IFRB examined Fixed Service Station assignments and sent the results to Administrations inviting comments. A study of replies from 27 of these Administrations revealed that more than 65% of the frequency assignments to Fixed Service Stations had either been cancelled completely or were being used strictly as an emergency back-up arrangement for other means of communications. (IFRB Circular No. 353 dated May 26, 1976) refers.

15. Basically the broadcast bands have not changed significantly since the International Telecommunication Union (ITU) Radio Conference of Atlantic City, 1947.

16. In view of the extremely bad situation prevailing in the field of High Frequency Broadcasting, primarily due to congestion in its bands; it is obvious that the WARC 1979 will consider a more equitable distribution of the spectrum amongst the various services, considering the present situation of the needs of broadcasting and the picture of the present usage of High Frequencies by the Fixed Services.

HIGH FREQUENCY BROADCASTING PLAN:

17. If it is possible to expand the High Frequency bands by a factor of at least two, there is a very real possibility of preparing a fixed frequency plan for Shortwave Broadcasting. It is felt that, although the present congestion in the shortwave bands is of the order of 3 to 4, the situation will ease considerably, due to planned usage of the spectrum. By planning the frequency usage, and ensuring good reception for every one, it will no longer be necessary for the countries to use half a dozen channels for the same programme which they are now doing as a matter of compulsive competition. This decrease of requirements will naturally result in a very good Fixed Frequency Plan. The WARC 1979 may propose a further Conference for making a high frequency broadcasting Plan in order to fully exploit the expanded bands.

LOW FREQUENCY BROADCASTING:

18. During the ITU Administrative Radio LF/MF Conference in 1975, considerable interest was shown by the Region-3 countries regarding the feasibility of the use of the LF band for broadcasting in these regions. The present table of frequency allocations in the Radio Regulations excludes Region-3 countries from such usage in view of the higher noise levels in these areas. The High Power Technolgoy which is now available has made possible the use of Low Frequency bands in these areas. This new picture has to be considered at this Conference.

OTHER TOPICS FOR DELIBERATION:

19. One of the items on the agenda of the WARC is to review and report on the activities of the IFRB and revise where necessary the provisions related to its method of work and internal regulations in addition to the other provisions of the Radio Regulations.

20. The Radio Regulations, in their present form have become highly complex. It is certainly desirable to revise and edit these in such a way as to provide for greater simplicity and clarity.

21. The question of the geographical division of the World into various regions is also likely to come up before the WARC, 1979 as it has been the feeling that the present division into 3 regions, has now become artificial in view of the global reach of the present day potentialities of Telecommunications.

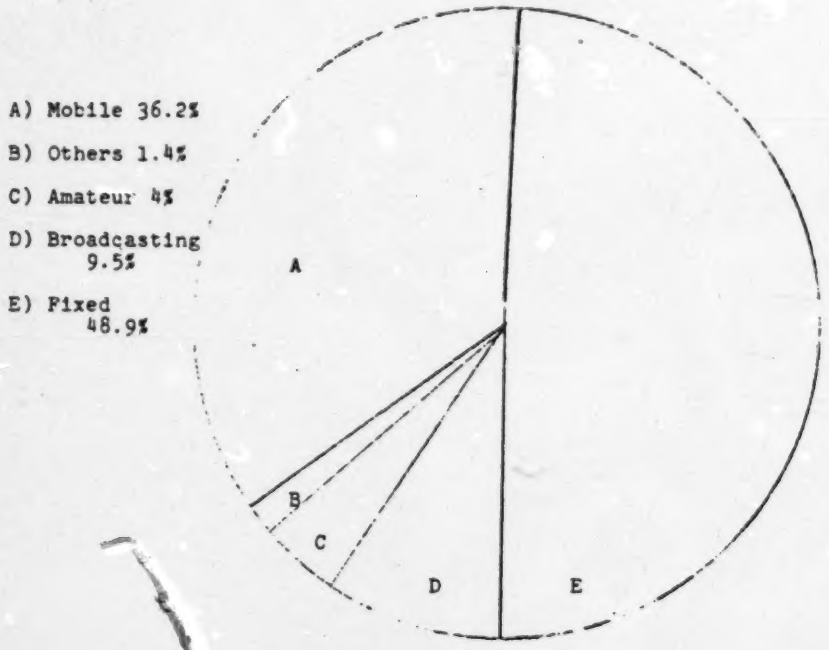
22. The activities and the method of work of the IFRB will also come up for discussion in the WARC in the light of the International Law, in particular, as it relates to the law of International Organisations. Efforts will also be made to improve the working of the IFRB in this context in order to make it a more effective organisation in the matter of coordination and efficient usage of the spectrum.

CONCLUSION:

23. The WARC 1979 will certainly have a very big task not only of updating the Radio Regulations for the technological developments that have taken place in the field of Telecommunications during the past 20 years, but will also have to foresee the developments and needs for the next 20 years. It is hoped that this Conference will result into better communications for every one and will lead to a more comprehensive understanding amongst the various people of the World.

INTERNATIONAL FREQUENCY ALLOCATIONS

(4 to 27.5 MHZ)



NOTES:

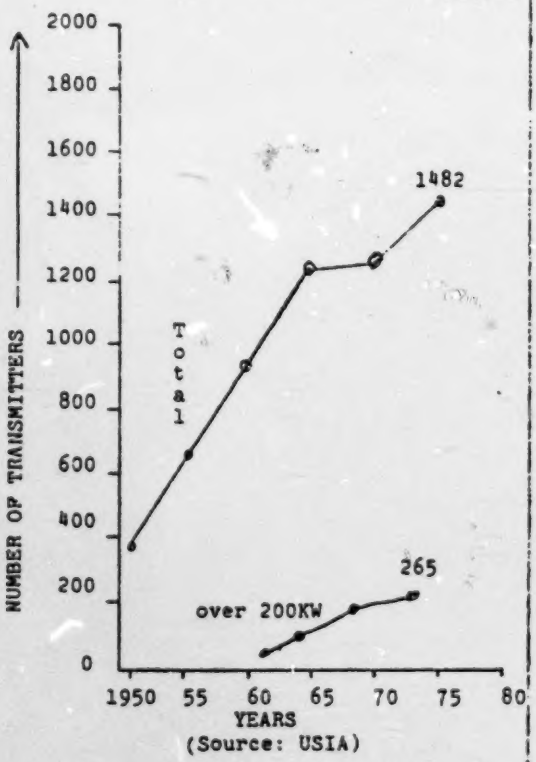
1) Each service allocation includes exclusive as well as shared bands.

2) Percentage calculation base uses total of all exclusive and shared channels for all services.

FIG. 1

NUMBER OF TRANSMITTERS WORLD-WIDE

FIG. 2



NUMBER OF BROADCAST RECEIVERS WORLD-WIDE

FIG. 3